Semi-Annual Newsletter of the Delaware Coastal Programs, Division of Soil & Water Conservation, Delaware Department of Natural Resources and Environmental Control

Coastal Delaware

Delaware NEMO – Building a team approach to natural resource education in support of local communities.

Suburban sprawl has become the prevalent development pattern in Delaware. Sprawl contributes to a loss of 3500 acres of farmland per year, aggravates traffic congestion, destroys natural habitat, contributes to groundwater pollution, and increases impervious surfaces and storm water runoff. The cumulative impact of this growth is extensive disruption of our landscape degrading the state's water quality, biodiversity and local community character.

For those of us in the natural resource education, management or protection fields, our challenge is to understand how we can minimize the negative impacts of growth and to share this information with land use decision makers, whether it be local elected officials, developers or even homeowners. Our challenge is greater in tough economic times when budgets for programs and staff are tight. That challenge provides us with the incentive and opportunity to collaborate with colleagues with similar program objectives to leverage our resources by working together.

NEMO – Non Point Education for Municipal Officials – is an educational program for local land use decision makers that addresses the relationship between land use and natural resource protection, with a focus on water quality. The NEMO Project was created in 1991 by the University of Connecticut and has since grown into a national network of universities, natural resource agencies and other partners that are engaged in a variety of outreach education programs helping communities better protect natural resources while accommodating growth. The assistance is provided through non-regulatory, resource based educational outreach programs that emphasize natural resource based planning and better site design.

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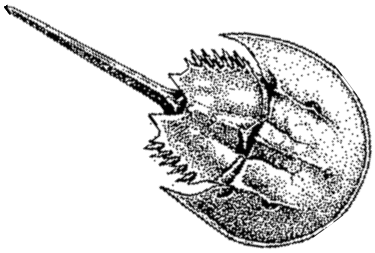
Delaware Coastal Program's Mission

Preserve, protect, develop and where possible restore and enhance the resources of Delaware's coastal zone by effective administration of the Coastal Management program and the National Estuarine Research Reserve.

Issue No. 2
Spring 2003

Message from DCP Administrator



Did you know that you are probably a coastal manager?

Some people refer to two types of coastal managers, those "Managers" with a capital M, and those "managers" with a lower case m. DNREC and NOAA staff who work on coastal zone management as their career are often referred to as Managers with a capital M. Yet, it would be impossible to effectively manage the coastal zone without the managers with the lower case m. Those managers include our local governments who through their day to day work protect, preserve and where appropriate develop the coast; our volunteer league who help us monitor and improve the coast through their efforts; our environmental education system who teach all Delawareans the importance of nature, and private citizens who have no idea that their choices impact the management of the coast.

Delaware's fiscal situation may get worse before it gets better. The costs of defending our Nation will undoubtedly tighten the federal budget as well. In the past this has resulted in a reduction in state and federal budgets for environmental programs. I expect further reductions in the budgets that fund environmental protection. We have always needed all types of coastal managers regardless of whether they have a capital M or not. During times like now, we need all the coastal managers we can muster.

Please contact me or other DCP staff on how you can hone your coastal management skills. And a big thanks to all of Delaware's coastal managers.

Sarah W. Cooksey

Delaware NEMO, *continued from page 1*

Delaware was first introduced to the NEMO Project in the Spring 2001 when the Connecticut NEMO team gave a day-long program on what NEMO is and how to start a program at a workshop hosted by the UD Sea Grant Program and the Greater Lewes Foundation. As a follow-up and kick-off for Delaware NEMO, Sea Grant with the Greater Lewes Foundation, the Delaware Coastal Management Program and a host of public and private partners co-sponsored a workshop on "Community Planning for Open Space and Natural Resource Protection".

Delaware NEMO will build on existing collaborative relationships among university, state agency, local government, non-profit and private partners to develop educational programs and demonstration projects. The objective will be to deliver applicable, flexible, efficient and effective programs that encourage better land use decisions at the local level. The pilot effort is being funded with support from the Delaware Coastal Management Program and Delaware Sea Grant's Coastal Community Initiative and coordinated by UD's Sea Grant Marine Advisory Service. For more information about Delaware NEMO, whether you are interested in collaborating as a partner or interested in upcoming educational programs, please contact Joe Farrell at 645-4250 or jfarrell@Udel.Edu.

Joe Farrell
Marine Resource Management Specialist
University of Delaware
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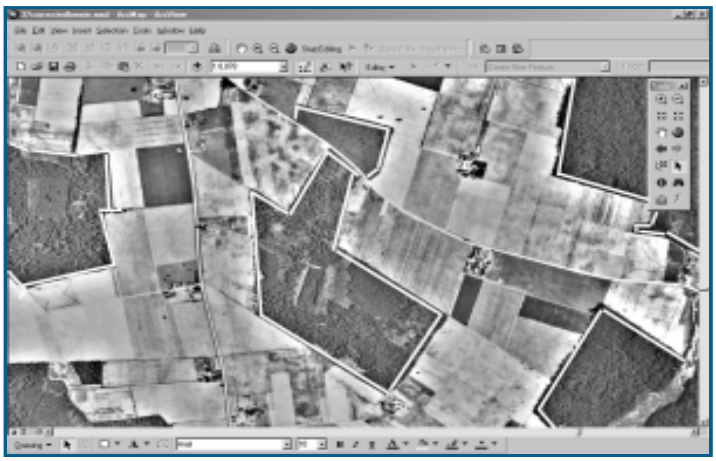
Remote Sensing for Coastal Management
Highlight – "Mapping 1937 Statewide Forest Cover"

Remote sensing is the science of obtaining and analyzing data or information about a subject or study area by a device that does not come in contact with or actively influence the subject or study area. Often, the data is acquired in the form of images, usually acquired from satellites in space or cameras mounted in airplanes. Remote sensing can be a very useful tool for coastal managers. For example, remote sensing can be used to get better understanding of our beaches, dunes, and coastal terrain. This data is obtained from aerial photos and is called topography data. For example, with this type of data, coastal managers can tell developers and home owners how far or close to the ocean front they can build their houses so that they have protection from storms and waves, but also maintain the best view of the sea!



In this issue of the newsletter we'll be looking at a coastal remote sensing project that involves all of Delaware. This project involves using historical aerial photos of the whole state of Delaware taken from a plane in 1937. With these photos, researchers can identify potential "old growth forest." Older growth forest is an area of forest which contains significant amounts of trees in their oldest growth stage that have been subject to little disturbance, the effect of which is now negligible. Older growth

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Delaware Clean Marina Initiative Prepares to Launch

The Delaware Clean Marina Initiative, set to debut in May 2003, will assist marina, boatyard, and yacht club operators in protecting the natural resources that provide their livelihood - clean water and fresh air. It is a voluntary program that gives managers helpful resources to protect the environment and minimize pollution by providing technical advice and education material.

With the regional success of the program and increases in the number of Certified Clean Marinas in neighboring states, a Certified Clean Marina in Delaware would benefit from the recognition that comes with operating as an environmental steward. Along with flying a regionally recognizable flag with the Clean Marina logo, Certified Clean marinas will enjoy free publicity, cost-share opportunities, and the satisfaction of knowing that they are ensuring the health of our environment for themselves, their family and their neighbors.

The program will recognize environmentally responsible facilities as "Certified Clean Marinas" and benefit the environment through:

- Improved water quality for living resources,
- Reduced trash and chemicals entering our waters,
- Maintenance of healthy ecosystems;
- and Preservation of the scenic beauty of Delaware's waterways.

To learn how to become a Certified Clean Marina, or for more information on the Delaware Clean Marinas Initiative, please contact:

Dave Chapman
University of Delaware
Sea Grant Marine Advisory Service
College of Marine Studies
700 Pilottown Road
Lewes, DE 19958
Phone: (302) 645-4268
Fax: (302) 645-4332
E-mail: dchapman@udel.edu

Delaware Marina photo courtesy of William Folsom, NOAA, NMFS

Remote Sensing, continued from page 3

forest in Delaware is important because it is known to be one of the most biologically diverse habitat community types in the State. For simplicity, and to avoid the need differentiate between tree types and specific growth stages, older growth forest is defined for the purpose of this project as areas that have not be clear cut for 50 or more years. The reason this project is so important to Delaware and Delaware's coast is the forest canopy, canopy gaps, and understory of these forested areas harbor a high number of rare and endangered species.

A better understanding of the location, quantity, degree of fragmentation, and opportunities for restoration on adjacent areas would greatly enhance our ability to improve the conservation of these habitats in Delaware. Protection of these critical rare habitats would also significantly advance state efforts to protect biodiversity.

1937 aerial photography, obtained from national archives, has been scanned and rectified using ERDAS Imagine software providing a state-wide imagery cover of 1937 for interpretation of historic forest cover. 1937 forest GIS polygons have been digitized state-wide. These will be compared with the 1997 forest polygons to identify stands of trees that still exist. These locations indicate the most likely areas of historic forest. Sites will then be field verified as older growth forest or as areas that have been harvested during the 50 year interval. This coverage is being used to compare the loss of older forest with each new land use/land cover mapping effort in Delaware to track the trend of loss of these rare habitat areas. When this project is completed it will provide coastal managers with the necessary tools to best protect these rare habitats and sensitive species.

For more information, please contact Tim Lucas or Rico Santiago at (302) 739-3451.

Conservation Design and Subdivision Open Space Management Assistance Grants Awarded to Delaware Communities

The DNREC's Delaware Coastal Programs, in cooperation with the Delaware Office of State Planning Coordination, has awarded $86,935 in grants to 11 Delaware communities to help promote the use of conservation design and to assist in the management of open space conservation areas. These grants are being provided to implement the environmental conservation components of Governor Ruth Ann Minner's Livable Delaware Initiative.

Conservation design is a process by which land is developed in an ecologically sensitive way. It considers the specific landscape and parcel features and works within the environmental constraints they present. For example, conservation design usually incorporates more open space that can be managed for active uses and for environmental conservation purposes, minimizes the amount of impervious surfaces, provides for innovative stormwater design, protects existing quality habitat areas and restores degraded habitats. In short, it is a process that melds the good things of past and present development approaches to build better communities, protect more of the environment, and reduce the public's cost to pay for infrastructure.

The following 11 Conservation Grants were awarded to Delaware communities:

1. The City of Lewes received the largest grant, $20,000, for the Lewes Canal Front Park. Grant funds will be applied to costs associated with the planning and design of various plantings and storm water management elements of the Lewes Canal Front Park.

2. The town of Odessa received $15,000 for formulating development ordnance and regulations for

Last year's grant recipient, Odessa Chase in Middletown, received money for reforestation of sections of open space.

environmentally sensitive land. It is anticipated that this project will demonstrate the value of conservation design in residential and commercial developments.

Odessa Chase had the help of area Boy Scouts to plant trees.

3. Slaughter Beach was awarded $15,000 for a project to update the town's Comprehensive Land Use Plan in accordance with Livable Delaware initiatives. This would be done through incorporation of a more intense strategy for land conservation and open space requirements. From the environmental studies, recommendations for an ordinance and regulations for protecting environmentally sensitive land for the town will be formed. Preservation of water quality, wildlife habitat, and the wetlands is anticipated through this project.

4. Village of Arden: $2,940 to enhance its ability to conserve, manage, and protect the habitat and natural resources of its 22-acre Arden Woods by creating a professional natural resources inventory. The village has adopted a Forest Stewardship Policy to preserve the natural ecosystem of this 200 year old forest, one of the oldest tracts in the Delaware Piedmont region, which has a potential for rare and endangered species. The resources inventory would greatly enhance the Village's ability to implement the stewardship policy.

5. Town of Bridgeville: $3,000 to develop a new zoning ordinances and to create a subdivision ordinance to bring the town's development regulation into compliance with the recently adopted Town of Bridgeville Comprehensive Plan.

6. Fox Hunter Crossing Maintenance Corporation, Southern New Castle County: $4,320 for reforesting 6.67 acres on the outer edge of the community's open space, providing for approximately 1 mile of nature trails, and installation of bird nesting boxes. Control of invasive species is also included in this plan.

7. Middletown: $2,000 for the reintroduction of Delaware native trees and shrubs into the Middletown Nature Area.

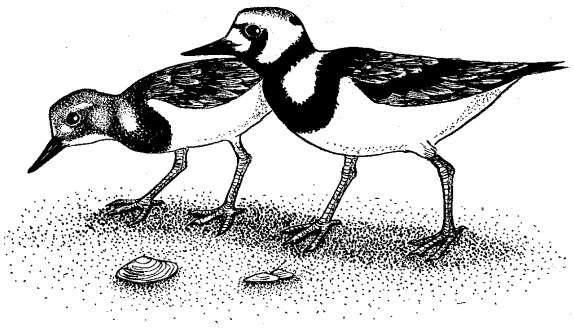
8. Laurel Youth and Community Conservation Education Program: $8,325 to mobilize, educate, and empower private citizens and future generations to become stewards of the land. Develop demonstration sites that can serve as sustainable education tools for modeling the principle of conservation design, habitat restoration and management.

9. Limestone Hills Maintenance Corporations, Rt. 7 near Hockessin: $1,500 for a pilot habitat restoration project that will provide an example of improved habitat management possible for parts of their 307.73 acres of private open space to enhance natural habitat, protect the community's aesthetic landscape vista, control invasive species, and reduce maintenance costs associated with mowing.

10. City of Newark: $9,850 for mitigation of steam erosion along the Christina Valley Stream through Rittenhouse Park. The project will improve open space, forest lands, wildlife habitat, and water quality in the area. It will also help alleviate the impact of development along the Christina while preserving and protecting the existing trees and trail along the proposed site.

11. West Hunt Maintenance Corporation, Southern New Castle County: $5,000 for a project that will naturally eliminate excess nutrients from reaching the spring fed pond in Westside Hunt and eventually, the Chesapeake Bay. This project will provide a peaceful natural setting for a walking trail and produce an ecosystem that will bring back native wildlife to live in harmony with the community of Westside Hunt.

For more information, contact David B. Carter, (302) 739-3451.



Tags Help Researchers Understand Horseshoe Crab Populations

A multi-year horseshoe crab tagging study will begin this spring in the Delaware Bay. Before the spawning season begins, scientists from U.S. Geological Survey, U.S. Fish and Wildlife Service, Delaware Coastal Programs and Cornell University will tag and release thousands of horseshoe crabs from the mouth of the Bay. By re-spotting tagged horseshoe crabs as they come ashore to spawn, researchers can estimate the total number of horseshoe crabs that spawn in a given year, estimate survival from year to year and identify sub-populations of horseshoe crabs.

Beginning in 2004, scientists will also track the movement of individual horseshoe crabs using *radio telemetry*. Over a two year period, hundreds of female horseshoe crabs will be outfitted with a tiny transmitter that will emit a unique signal each time she comes to shore. Radio receivers, positioned strategically on both sides of the Bay, will record that signal. This method will allow researchers to track the movements of individual horseshoe crabs throughout the entire spawning season, a task that would be impossible without this technology.

The tagging and radio telemetry study, coupled with on-going research like horseshoe crab egg monitoring and the volunteer based spawning survey, will increase our understanding of horseshoe crab migration, survival, and abundance and allow for better management of these special creatures and their important habitats.

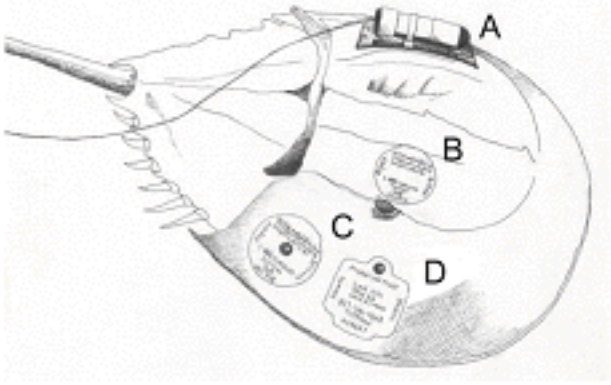


Figure showing possible locations of tags and tag types. Note that an actual horseshoe crab will have only one or two of the tags shown. A) Radio tag, B) Glued disk tag, C) Round button tag, D) Squarish button tag.

You can help! If you see a tagged crab on the beach, please record the location, time, date and all tag numbers and tag types (some crabs may have more than one tag). In addition, please report its sex and whether it was found alive or dead. This information can be reported by calling 1-888-LIMULUS or by contacting Dave Smith at **david_r_smith@usgs.gov.**

The 2003 Annual Bay-wide Horseshoe Crab Census

The Delaware National Estuarine Research Reserve is once again coordinating the 2003 Horseshoe Crab Census at Kitts Hummock, Ted Harvey Wildlife Conservation Area, and North Bowers Beaches. We are looking for dedicated, reliable volunteers to assist us with this effort as part of the Annual Bay-wide Survey. The first census of breeding horseshoe crabs in Delaware Bay took place in 1990. Now, every spring on a total of three peak spawning days around the full and new moons of May and June, volunteers donate their time to count crabs on key beaches in Delaware and New Jersey.

Staff of the St. Jones Reserve will give a half hour training beginning at 6:30 p.m. on Wednesday, April 16, 2003 for those who are interested in assisting this year. Sign up sheets for the various dates and beaches will be available. Volunteers may sign up for one or more nights. Preference for date and beach will be given to those volunteers who can commit to more than one survey. It is not required that you attend in order to participate, but it is highly encouraged to learn proper data recording procedures and distinguish between male and female horseshoe crabs, and to have first pick of dates and beaches.

Please join us after the training at 7:00 p.m. for a guest presentation by Stew

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Crab Census, continued

Michels, Environmental Scientist with the Division of Fish and Wildlife. Stew will discuss Delaware's management of this species, where we are now and where we are going. A brief business meeting of the Friends of the DNERR will follow.

2003 Survey Dates and Times

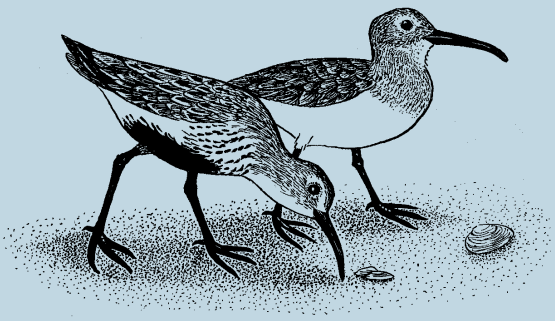
Tuesday, April 29, 9:30 p.m. (tentative)
Thursday, May 1, 10:36 p.m. (tentative)
Saturday, May 3, 11:46 p.m. (tentative)
Wednesday, May 14, 9:00 p.m.
Friday, May 16, 10:41 p.m.
Sunday, May 18, 12:24 a.m. (May 19)
Thursday, May 29, 9:32 p.m.
Saturday, May 31, 10:45 p.m.
Monday, June 2, 12:03 a.m. (June 3)
Thursday, June 12, 8:39 p.m.
Saturday, June 14, 10:25 p.m.
Monday, June 16, 12:09 a.m. (June 17)
Friday, June 27, 9:02 p.m.
Sunday, June 29, 10:23 p.m.
Tuesday, July 1, 11:44 p.m.

Please note that the times listed are for high tide at the mouth of the St. Jones River. The St. Jones Reserve Center will be open one hour prior to the times listed above so that volunteers may meet their census team and pick up materials before driving to the site. Volunteers under age 18 must be accompanied by an adult.

Call the Delaware National Estuarine Research Reserve at 302-739-3436 for more information or to register for the Horseshoe Crab Census Training. Visit http://www.lsc.usgs.gov/aeb/2065/ for information on Horseshoe Crab Monitoring.

Upcoming Coastal Workshops and Events

Conference on Dead-end Canals
Saturday, May 17
9:00 a.m. - 4:00 p.m.
Crabbers' Cove/Ruddertowne
Dewey Beach, DE
Call Center for the Inland Bays office
at (302) 645-7325 for information
www.inlandbays.org



Coastal Cleanup
Saturday, September 13th (tentative)
For more information please contact Don White or Jason Gleockler at (302) 739-4506
www.dnrec.state.de.us

Coast Day
Sunday, October 5th
11 a.m. to 5 p.m.
University of Delaware
Hugh R. Sharp Campus
700 Pilottown Road
Lewes, Delaware

Discover the fascinating world of marine science through lectures, research demonstrations, ship tours, touch tanks, children's activities, a nautical crafts show, crab cake cook-off, seafood chowder challenge, delicious seafood, and much more! Admission is free; parking is $2. Coast Day has won state and national awards for helping people learn more about our seas and shores. Each year, this unique event attracts crowds of 10,000 visitors and more. You can choose from dozens of fun, interesting activities for the whole family!

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http://www.dnrec.state.de.us/DNREC2000/Divisions/Soil/dcmp

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Production of this Document Funded By:

The Delaware Department of Natural Resources and Environmental Control, Delaware Coastal Programs, Pursuant to National Oceanic and Atmospheric Administration Award No. NA17OR1234

Printed on recycled paper.
Document No. 40-07/02/01/01

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Coastal Fact Sheet # 2:

Special Insert
Coastal Nonpoint Pollution

Nonpoint Source Pollution

Rainwater and melting snow run over lawns, parking lots, and farm fields, though city streets and forests, picking up and carrying pollution into our rivers and oceans. Because this polluted runoff comes from many diverse sources and not from a single point (such as a pipe), it is called nonpoint source pollution. In coastal areas, nonpoint source pollution is generated by several major categories of activities such as, agriculture (crops and livestock), forestry (timber harvesting), urban (cities, roads, and residential areas), marinas (boat storage and service facilities), and hydromodification (dredging and building dams). Nonpoint source pollutants from these activities include sediment (soil particles), nutrients (nitrogen and phosphorous), and chemicals (pesticides, oil, salts, and metals). Wetlands, riparian areas, and vegetated treatment systems have important potential for reducing nonpoint source pollution in coastal waters from a variety of sources. Degradation of existing wetlands or riparian areas can cause the wetlands or riparian areas themselves to become sources of nonpoint pollution in coastal waters.

Nonpoint source pollution affects coastal waters to varying degrees. Most people understand that clean water is important for drinking or recreational purposes. Some do not understand that degraded water quality also affects individuals who work on or around water, whole communities whose economic livelihood is dependent upon the waterways, and the plants and animals that depend upon water for survival. On a localized scale, poor land management adjacent to coastal water can result in sediment loading from erosion of streambanks leading to habitat destruction, or nutrient loading that can result in algal blooms. On the other hand, the combined effects of many smaller nonpoint sources leading to water quality degradation can lead to reductions in tourism due to foul smelling water or closed shellfisheries.

Delaware Coastal Nonpoint Program

The Coastal Nonpoint Program was established by Congress in 1990 under section 6217 of the Coastal Zone Act Reauthorization Amendments entitled *Protecting Coastal Waters*. This program ensures that the coastal states have tools needed to address polluted runoff. A consistent set of management measures were established for states to use in controlling polluted runoff. Management measures are designed to prevent

What can you do to help?

♦*Service your car! Properly servicing your car stops leaks preventing oil and antifreeze from entering the waterways.*
♦*Apply the correct amount of fertilizer to your lawn! With the next rain, the excess fertilizer applied to your lawn will be washed into the nearest stream, wasting both your valuable time and money.*
♦*Pick up after your pet! Pet waste can contain fecal coliform bacteria. These bacteria can pose health risks to humans and other animals, and result in the spread of disease.*
♦*Don't water your sidewalk! Concrete is an impervious surface that allows water to flow over it, picking up pollutants along the way to the nearest storm drain.*
♦*Maintain your septic system! A faulty septic system can leak and contaminate the groundwater supply. Maintain your system by having it pumped out every three years.*

More tips for preventing and reducing nonpoint source pollution can be found at: http://www.dnrec.state.de.us/dnrec2000/Divisions/Soil/dcmp/nonpoint.htm

polluted runoff resulting from a variety of sources. The program includes enforceable policies and mechanisms to ensure implementation of the measures. The program is jointly administered at the federal level by the national Oceanic and Atmospheric Administration (NOAA) and the U.S. Environmental Protection Agency (EPA).

In July 1995, Delaware submitted its Coastal Nonpoint Program for federal approval to NOAA and the EPA. On March 1st, 2002, Delaware became the 9th state to receive approval out of 33 states required to develop a Coastal Nonpoint Program. The Delaware Coastal Nonpoint Program is administered in the State of Delaware by the Delaware Coastal Programs in the Division of Soil and Water Conservation of the Department of Natural Resources and Environmental Control.

Delaware's Coastal Nonpoint Program has a number of priority areas on which to focus, including: local government capacity building, tracking and monitoring, clean marinas, and education and outreach. Through cooperative efforts with both government agencies and local organizations, numerous projects have been designed to help address issues concerning nonpoint source pollution in Delaware.

More information about these and other projects can be found at:
http://www.dnrec.state.de.us/dnrec2000/Divisions/Soil/dcmp/nonpoint.htm

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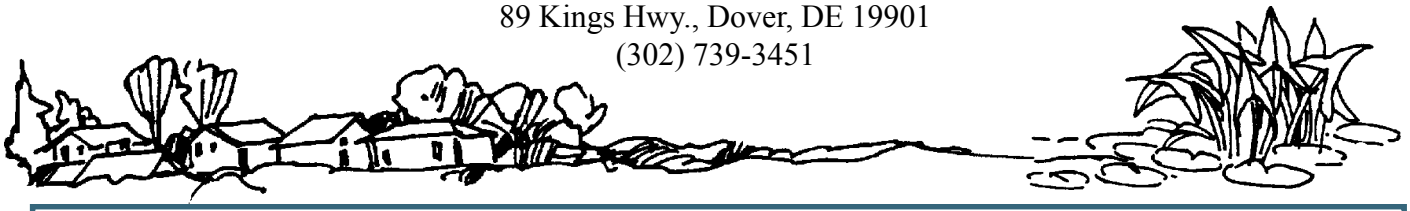

The Delaware Coastal Nonpoint Program, through cooperative efforts with both government agencies and local organizations, have designed numerous projects to help address issues concerning nonpoint source pollution in Delaware. Examples of these projects/programs are given below.

- *Tracking & Monitoring System – Developing an integrated system to monitor and assess progress on nonpoint source pollution control in Delaware.*
- *Delaware NEMO - building a team approach to natural resource education in support of local communities*
- *Onsite Inspection Pilot Program – Supporting proper inspection and maintenance of onsite wastewater disposal systems.*
- *Delaware Riparian Buffer Initiative – Developing tools to help conservation planners prevent erosion and water pollution with riparian buffers.*
- *Working to develop a Delaware Clean Marina Program – A voluntary program that will challenge marinas to identify opportunities and implement practices to reduce and control pollution associated with boat operations and facilities management.*
- *Monitoring of innovative stormwater practices – Water quality monitoring of multi-cell vegetated forebay systems designed to capture sediment and other pollutants from stormwater that would otherwise enter neighborhood waterways.*
- *System-Wide Monitoring Program – Designed to support nonpoint source pollution control programs by establishing local networks of continuous water quality monitoring stations in the St. Jones and Blackbird Creek watersheds.*